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## Farming-related terms in Proto-Turkic and Proto-Altaiic

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Historical sources from different times describe Turkic, Mongolic and Tungusic traditional economies as based on pastoralism, with agriculture playing only a minor role among their subsistence strategies. Cultural reconstruction as used by historical linguists may provide additional inferences about the relative importance of farming and pastoralism in these lineages. This paper focuses on the origin of agricultural and pastoralist terms in Proto-Turkic and their parallels in the other branches of Altaic, i.e., Mongolic and Tungusic. I show that the majority of the Turkic pastoralist lexicon has a secondary nature, being formed due to contact, derivation or lexical recycling. At the same time, farming-related terms in Turkic are mostly unborrowed and underived and a few of them have reliable Altaic connections. The very limited number of agricultural terms reconstructible to Proto-Altaiic as compared to the preceding Proto-Transeurasian period can be attributed to a loss of farming-related lexicon over time after the break-up of Altaic.

**Keywords:** Proto-Turkic, Proto-Altaiic, agriculture, pastoralism, cultural reconstruction

### 1. Introduction

The term “Altaic” as used in this paper refers to a grouping of three relatively well-described language families, i.e., Turkic, Mongolic and Tungusic. For a long time, the question of whether these families are genetically related has provoked a lively discussion among scholars, and it currently remains one of the most controversial issues in historical linguistics. All experts in the field, regardless of their position on the above question, agree that the relationships between the language families are extremely complicated due to extensive lexical borrowing, primarily from Turkic to Mongolic and from Mongolic to Tungusic. Some linguists, so-called

“Anti-Altaicists,” such as G. Clauson (1956), G. Doerfer (1963–1975) and A. Vovin (2005), believe that all the similarities between the three groupings can be explained either through multiple contacts or by pure coincidence. Their opponents, known as “Altaicists,” claim that it is nevertheless a genetic relationship that underlies striking lexical, morphological and structural similarities between Turkic, Mongolic and Tungusic, and that this proposition can be supported by a set of phonological correspondences, a list of cognates including some basic vocabulary items, and a number of shared grammatical units (see, e.g., Ramstedt 1952; Poppe 1960; Starostin et al. 2003 and Robbeets 2015 for different versions of Proto-Altaic grammar). Many of the contemporary proponents of Altaic unity, such as Menges (1975, 1984), Miller (1996), Starostin et al. (2003) and Robbeets (2005, 2015) argue that, coupled with the Japonic-Koreanic branch, Altaic forms a larger family for which, following Johanson & Robbeets (2010), I use the term “Transeurasian.” In line with these authors, my study is based on the assumption that the Transeurasian languages can be traced back to a single ancestor and that there are close affinities within the Altaic group.

The Altaic languages provide a curious and rather peculiar case in terms of cultural reconstruction, particularly with regard to the question of what subsistence patterns can be assigned to the speakers of their ancestral language. Archaeological and historical sources from different times describe Turkic, Mongolic and Tungusic traditional economies as based on pastoralism, with agriculture playing only a minor role among their subsistence strategies (see, e.g., Golden 1992; Kljaštornyj & Sultanov 2009; Lane 2006; Turaev et al. 1997, 2001, 2003). In general, this can be confirmed by linguistic evidence, at least as far as we rely on etymological dictionaries of the respective language families (see, e.g., Sevortjan et al. 1974–2003 for Turkic, Sanžeev et al. 2015 for Mongolic and Tsintsius 1975 for Tungusic), all listing many more pastoralist terms than agricultural terms. However, the question remains as to whether there are correlations between these pastoralist and agricultural terms between the language families under discussion and if so, whether they are the result of language contact or inheritance.

This paper presents a comparative study of farming-related terms that can be reconstructed for two proto-languages, Proto-Turkic and its proposed ancestor Proto-Altaic. While Proto-Turkic cultural reconstruction has already attracted some attention from scholars (e.g., Tenišev et al. 2006), Proto-Altaic has hardly been discussed in this respect. To a certain extent, this can be attributed to the fact that it is not commonly accepted to distinguish between Proto-Transeurasian and Proto-Altaic reconstructions as the internal structure of the Transeurasian family itself is under discussion. To give one example, Starostin et al. (2003: 235) argue that Proto-Transeurasian split into Turko-Mongolic, Tungusic and Japonic-Koreanic around the 6th millennium BC. This classification leaves no room for “Proto-Altaic” as a

linguistic entity. However, the idea that has received a much broader acceptance among Altaicists is that Japonic separated from Transeurasian first and can be thus clearly distinguished from Altaiic, that is, Turkic, Mongolic and Tungusic (Miller 1996; Dybo 1997; Robbeets this volume). For example, Dybo argues for Proto-Altaiic (“continental Proto-Altaiic,” according to the author’s terminology) as a language that divided directly into Turkic, Mongolic and Tungusic, emphasizing an essentially even distribution of triple and paired lexical matches between the three branches. The question definitely requires further examination using the methods of phylogenetic linguistics (Savelyev forthcoming). In the meantime, I will follow preliminary Bayesian estimates by Robbeets (this volume), which are based on shared basic vocabulary items. They point to a binary split of Proto-Transeurasian into Proto-Altaiic and Proto-Japonic-Koreanic at approximately 5700 BC, with a subsequent split of Proto-Altaiic into Turko-Mongolic and Tungusic at approximately 4600 BC. For its part, Turko-Mongolic divided into Turkic and Mongolic at approximately 2800 BC. In this context, and given that closer genetic affinities generally imply more numerous lexical matches, below I focus on Turkic in the context of the other Altaiic branches, leaving aside the Japonic and Koreanic branches.

Only a few papers deal with the issues of the Proto-Altaiic homeland and cultural reconstruction of Proto-Altaiic as compared to those of Proto-Transeurasian. Robbeets (2015, 2017) associates the Proto-Altaiic and the Proto-Turko-Mongolic speech communities with the Neolithic Hongshan culture (ca. 4500–2900 BC) in the West Liao River Basin (Manchuria), which is thought to have relied on millet farming in combination with pig raising (Nelson 2001; Guo 1995). Robbeets hypothesizes that the Proto-Altaiic economy, as well as the preceding Proto-Transeurasian one, was in part based on cultivation of crops, with gradual domestication towards the Hongshan period, putting forward both linguistic and archaeological evidence in favor of this assumption. S. Starostin (2008) connects the Proto-Transeurasian homeland to the Yangshao culture (5000–2000 BC) along the central Yellow River, which is often associated with Proto-Sino-Tibetan. Dybo (1997) does not directly address the problem of localization and archaeological affiliation of Proto-Altaiic but assumes that, based purely on historical linguistic evidence, the Proto-Altaiic speakers were nomadic pastoralists rather than agriculturalists. This assumption contradicts archaeological evidence, since Proto-Altaiic as dated by historical linguists existed long before the advent of the first pastoralists (3000 BC), not to mention nomadic herders (between 1200 and 700 BC), on the eastern steppes (Taylor et al. 2017; Janz et al. 2017). Janhunen (2015), who is a critic of the Altaiic proposal, argues that the similarities between the three families should be primarily attributed to prehistoric mutual influence, which implies that Proto-Turkic, Proto-Mongolic and Proto-Tungusic speakers have long lived in close contact with each other. Quite interestingly, Janhunen places their homelands in the southern part

of the Mongolian-Manchurian border zone, also referring to the possibility of the Hongshan affiliation of Mongolic and/or Tungusic.

This paper addresses the following questions:

1. Can we reconstruct agricultural vocabulary for Proto-Turkic in addition to a lexicon of pastoralism? If so, what are the characteristics of the agricultural vocabulary in Proto-Turkic?
2. Can the identification of Proto-Turkic with the Xiongnu by previous scholars be corroborated by the investigation of pastoralist and agricultural vocabulary?
3. What are the origins of pastoralist and agricultural vocabulary in Proto-Turkic? Can the terms be shown to be internally coined or borrowed from non-Transeurasian languages?
4. Are there any similarities between Turkic agricultural and/or pastoralist terms and those in Mongolic and/or Tungusic? Is it possible to distinguish borrowing versus inheritance in these words? Is there a tendency for pastoralist vocabulary to be attributed to borrowing, while agricultural vocabulary may be a residue of inheritance from Proto-Altaiic, or vice versa?

My contribution has the following structure. In Section 2, I give an overview of the contemporary views of the Proto-Turkic homeland, historical affiliation and cultural reconstruction. In Section 3, I discuss the set of pastoralist terms in Proto-Turkic, marking probable borrowings and morphological derivatives. In Section 4, I apply the same procedure to the Proto-Turkic agricultural vocabulary. Then I discuss possible Altaic connections for Proto-Turkic pastoralist (Section 5) and agricultural (Section 6) vocabulary. I conclude with some inferences regarding the results of this study.

## 2. Proto-Turkic: Its homeland and historical background

The Turkic peoples are known to be traditionally nomadic or semi-nomadic pastoralists, which can be confirmed by various written sources from at least the second half of the first millennium AD onwards (for example, a herding lifestyle including horse riding is reflected in Old Turkic runic texts, such as the 8th-century Kul Tigin inscription from the Orkhon river valley in Mongolia). For those Turkic-speaking peoples that were described as agriculturalists rather than pastoralists in the past few centuries, such as the Chuvash in the Volga Basin, a relatively recent shift from nomadism to sedentarism has been attested.<sup>1</sup> The majority of traditional

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1. Aḥmad ibn Faḍlān, who was a member of an embassy of the Abbasid Caliph to the Volga Bulgars, the ancestors of the modern Chuvash, in 922, witnessed that they lived in tents and their

Turkic societies practiced agriculture only as a secondary activity. Needless to say, one cannot automatically extrapolate such a situation to the Proto-Turkic period. However, one can provide some insights into the issue by integrating linguistic data with historical and archaeological evidence. To do so, it is first necessary to outline the contemporary views of the Proto-Turkic homeland and the probable historical affiliation of the Proto-Turkic speech community.

It is generally agreed among historians and linguists that the starting point of the Turkic migrations was located in the eastern part of the Central Asian steppe (see, e.g., Golden 1992; Kljaštornyj & Sultanov 2009; Menges 1995: 55). Turkologists use various definitions for describing the Proto-Turkic homeland, but most indicate more or less the same region. While Janhunen (1996: 26, 2015: 293) locates the Proto-Turkic homeland fairly precisely in Eastern Mongolia, Róna-Tas (1998: 88), in a rather general manner, places the last habitat of the Turkic speakers before the disintegration of the family “in West and Central Siberia and in the region south of it.” The latter localization overlaps in large part with that proposed by Tenišev et al. (2006), who associate the Proto-Turkic *urheimat* with the vast area stretching from the Ordos Desert in Inner Mongolia to the foothills of the Sayan-Altai Mountains in Southern Siberia. Such a vague localization seems to be quite compatible with the association of at least late Proto-Turkic speakers with nomadic herders. From a historical linguistic viewpoint, the region under discussion appears to be the most probable habitat for a language that is assumed to have been in contact with Old Chinese, Old East Iranian and possibly Tocharian (and, according to some scholars (see Dybo 2007), at the same time reaching the languages far to the north-west, such as Proto-Yeniseian, Proto-Samoyedic and Proto-Ugric). An attempt at verifying the homeland by examining archaeological and paleobotanical evidence, as well as the Proto-Turkic roots referring to natural environment, has also been made (Tenišev et al. 2006).

A few noteworthy proposals on the depth of Proto-Turkic, i.e., the time of its primal split into the Bulgar and Common Turkic branches, vary from the 5th century BC (Róna-Tas 1998, based on contact linguistics) to the period between 120 BC and the beginning of the first millennium AD (Mudrak 2009, based on glottochronological analysis of Turkic morphology and historical phonology) to the period between the 1st century BC and the 1st century AD (Dybo 2007, based on contact linguistics and lexicostatistics).

The proposals regarding the Proto-Turkic homeland can be seen in the context of the possible Proto-Turkic affiliation with the Xiongnu, a nomadic group that lived north and northwest of China in the first centuries before and after the common

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staple foods were different cereals along with horse meat, which may point to a semi-nomadic lifestyle.

era. Several dozen words used by the Xiongnu were recorded in Old Chinese texts such as *Shiji* (or the *Records of the Grand Historian*) and the *Book of Han*, and based on these few words, contemporary scholars have speculated on what language the Xiongnu may have spoken. Various hypotheses were put forward during the 20th century, yet the assumption that the Xiongnu, or at least some of them, were affiliated with Turkic-speaking groups has gained the widest acceptance among scholars (Ramstedt 1922; Basin 1948; Gabain 1949; Šervašidze 1986). This affiliation is based on direct linguistic evidence, i.e., comparing the Xiongnu words in Old Chinese texts with Proto-Turkic, supplemented by historical data that connects the Xiongnu and the subsequent Turkic peoples. Recently, the most reliable Xiongnu words that are comparable with reconstructed Proto-Turkic stems have been outlined by Dybo (2007). Janhunen (2015) also recognizes this affiliation. In short, although we can never exclude that the Xiongnu were a multi-ethnic confederation, it is very likely that their core was Turkic-speaking.<sup>2</sup>

Different historical and archaeological sources give clues about the subsistence patterns of the Xiongnu. Old Chinese histories (including *Shiji*) emphasize that the Xiongnu were nomadic pastoralists that bred different kinds of domestic ungulates, namely horses, cattle, sheep and camels (Watson 1961). On the other hand, there are multiple indications in Chinese chronicles (including *Shiji*, *Hou Hanshu* (or the *Book of the Later Han*) and notes on the Han annals by Yen Shi-ku) that the Xiongnu were familiar with agriculture, including millet farming (Bičurin 1950; Davydova & Šilov 1953; Davydova 1985). The written sources, however, do not indicate clearly whether it was the Xiongnu themselves or their Chinese captives who were involved in agricultural activities. From an archaeological perspective, although there is about 1000 years of nomadic life in Mongolia beforehand, the Xiongnu period is the first time we have any evidence of agriculture in the region. Agricultural tools and millet grains dating to this period have been found, as well as some isotopic evidence for millet consumption (William Taylor, p.c., Jena, May 2017). It is commonly agreed that the Xiongnu economy was based on pastoralism and had an agricultural component. However, the question of how important the latter was remains open (see Wright et al. 2009; Kradin & Kang 2011; Machicek 2011; Spengler et al. 2016 for further discussion). Given all these observations, it is interesting to examine whether historical linguistic analysis of Turkic subsistence terms can support the association of Proto-Turkic with the Xiongnu.

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2. Dybo (2007) shows that the Turkic affiliation is valid, first of all, for the late Xiongnu, while some early “Xiongnu” words may have belonged to an Eastern Iranian (Khotan Saka?) language. There is also a hypothesis by Pulleyblank (1962), which was supported by Vovin (2000, 2002), that the Xiongnu were a Yeniseian-speaking people. An agnostic view of the linguistic affiliation of the Xiongnu is presented in Doerfer (1973).

### 3. Pastoralist vocabulary in Proto-Turkic

Below I list some of the most relevant Turkic pastoralist terms. To give a more detailed picture, I distinguish between Proto-Turkic and Common Turkic levels. The former label is used when a root occurs in both major subdivisions of the family: the “Standard” Turkic languages, like Turkish, Uyghur, Kazakh etc., and the very specific Bulgar branch, which is represented by its only living language, Chuvash, as well as rather poor lexical data from the extinct Bulgar dialects preserved mainly as loanwords in Hungarian. The label “Common Turkic” means that the word is not attested in Bulgar and hence should be technically attributed to the time after the split of Proto-Turkic. However, due to scarcity of evidence from the Bulgar branch, it is common practice in the field to equate such roots with the Proto-Turkic ones unless a source of borrowing into Turkic has been established.

**Table 1.** Proto-Turkic pastoralist vocabulary

Semantic group	Proto-Turkic	Common Turkic
goat	* <i>geče</i> (~ <i>geči</i> ) ‘(she-)goat’ * <i>teke</i> ‘he-goat’ * <i>oglag</i> ‘kid’	* <i>ečkü</i> ‘(she-)goat’ * <i>erkeč</i> ‘gelded he-goat’
sheep	* <i>sarik</i> ‘sheep’ * <i>Koč</i> ‘ram’ <sup>3</sup> * <i>tokli</i> ‘lamb’	* <i>Koń</i> (~ * <i>Koyn</i> ) ‘sheep’ * <i>Koři</i> ‘lamb’

(continued)

3. Here and throughout this paper, capital letters in reconstructed Proto-Turkic forms represent a phoneme the exact characteristics of which are unclear because of a lack of data from relevant Turkic branches. In the case of the capital K and T, the question is whether we should reconstruct a voiced or an unvoiced stop, which are usually distinguished in Oghuz and Sayan reflexes if present (Illič-Svityč 1963; Dybo 2005; Tenišev et al. 2006; see Robbeets 2004 for a different view on the question). For vowels, such as A, what is unclear is whether a short or a long vowel should be reconstructed – an opposition that preserved in Yakut and Turkmenian and can be supported by additional data from the Bulgar and Oghuz branches (Dybo 2007: 52–53).



Table 1. (continued)

Semantic group	Proto-Turkic	Common Turkic
cattle	* <i>ingek</i> ‘cow’	
	* <i>būka</i> ‘bull’	
	* <i>ökür</i> ‘bull, ox’	
	* <i>dāna</i> ‘(two-years-old) heifer’	
	* <i>buʾa-gu</i> ‘calf’	
		* <i>sj̄ḡir</i> ‘cattle’ <sup>4</sup>
		* <i>ud</i> (~ * <i>od</i> ) ‘cattle’ <sup>5</sup>
horse	* <i>at</i> ‘(riding) horse’, * <i>adḡir</i> ‘stallion’	
	* <i>ulāla</i> ‘(small) horse’	
	* <i>eġek</i> ‘donkey’	
	* <i>Kulum</i> ‘foal’	
	* <i>yügen</i> ~ * <i>üygen</i> ‘bridle’	
	* <i>ed̄ner</i> ‘saddle’	
		* <i>yunt</i> ‘horse, (mare)’
		* <i>yilki</i> ‘herd of horses’
		* <i>bün-</i> ~ * <i>bīn-</i> ‘to mount a horse’
		* <i>kōlek</i> ‘young of camel’ <sup>6</sup>
camel		* <i>debe</i> ‘camel’ <sup>7</sup>
		* <i>bugu-ra</i> ‘camel stallion’
		* <i>ingen</i> ‘female camel’
		* <i>botu</i> ‘young of camel’
		* <i>tōrum</i> ‘camel colt’
		* <i>Kōm</i> ‘camel’s pack-saddle’

4. Being absent in Chuvash and among the Bulgar borrowings in Hungarian, the root may still be traced back to Proto-Turkic in view of its probable attestation in Danube Bulgar, see Mudrak (2005).

5. Chu. *vilʹəχ* < *vəʷy-ləχ* ‘cattle’ goes back to PTK \**od* and may be compared to CT\**ud* ‘ox, bull’, assuming a vowel alternation in Proto-Turkic.

6. The word is reflected in CT\**kōšek* ‘young of camel’. Its otherwise unattested Bulgar cognate has been borrowed in Hungarian with a more generic meaning: *kölyök* ‘young of an animal, kid, puppy, lad’ (Róna-Tas & Berta 2011: 586–588). Reconstructing a pastoralist meaning for Proto-Turkic is thus not very reliable.

7. Chu. *təʷve* ‘camel’ is most probably an early Kypchak borrowing, see Dybo (2010: 58–59).

Table 1. (continued)

Semantic group	Proto-Turkic	Common Turkic
pig	* <i>γAsna-k</i> ~ * <i>γAsna-g</i> ‘pig’ <sup>8</sup>	* <i>doñur</i> ‘pig’ * <i>čōčka</i> ‘young pig’
dairy	* <i>sag-</i> ‘to milk’ * <i>ayran</i> ‘a k. of salty yoghurt’ * <i>dorak</i> ‘a k. of cheese or quark’	* <i>yogurt</i> ‘curdled milk’ * <i>Katik</i> ‘fermented milk product’ * <i>Kumür</i> ‘alcohol milk drink’ * <i>Kürüt</i> ‘a k. of dried quark, cheese’
technology	* <i>göpe-ne</i> ‘haystack’	* <i>kidir</i> ‘felt’ * <i>aran</i> ‘shed, stable’

As can be seen, Proto-Turkic had a sophisticated system of names for domestic animals (horses, cattle, pigs, goats and sheep), distinguishing age and sex, which is quite typical of a nomadic pastoralist speech community. It should come as no surprise that, in some cases, synonymic names, e.g., for horses, are reconstructed, as they may also have been involved in a kind of semantic distribution. The lack of camel-related vocabulary in the Bulgar branch does not necessarily mean that it was absent in Proto-Turkic, since the Bulgar tribes would have lost the tradition of camel breeding (and hence the related vocabulary) at some point after migrating to Eastern Europe in the first centuries AD. It is also indicative of a pastoralist subsistence strategy that we can reconstruct some pastoralism-related verbs (‘to milk’, ‘to mount a horse’) and a good number of names for dairy products.

Many attempts have been made to explain the Proto-Turkic names for domestic animals as borrowings (often from an Indo-European language, see, e.g., Gamkrelidze & Ivanov 1984), but few of them appear to be plausible. The most widespread view is that some of the Proto-Turkic pastoralist roots originate from an Eastern Iranian language, probably Khotan Saka, cf. pTk \**dāna* ‘heifer’ < Khot. *dīnū*, pIr \**dainu-kā* ‘cow’ (Bailey 1979: 159; Rastorgueva & Edelman 2003: 447; Dybo 2007: 116–117), pTk \**dora-k* ‘a k. of cheese’ < MIr. \**tura-ka*, cf. Av. *tūiri-* ‘curdled

8. The root is preserved only in the Bulgar branch (Chu. *sisna* instead of expected *šisna*, which is a result of late contamination with *šis-* ‘to defecate’) but is very likely to be archaic. With the same meaning, it was borrowed from different Bulgar dialects into Hungarian (*disznó*) and Mari (*sösna*, *sasna*). No external source for the probable borrowing into Bulgar has been proposed so far.

milk', Khot. (?) *ttūra* 'cheese' (Bailey 1979: 132; Dybo 2007: 117) and, somewhat less reliable due to phonological complications, pTk *\*ečkü* 'goat' as compared to pIr *\*aža-* 'goat' (Rastorgueva-Edelman 2000: 292–293; Dybo 2007: 123–124). Beyond that, a Tocharian source has been proposed for pTk *\*ökür* 'bull, ox', cf. PToch *\*okso* 'cow, ox' < pIE *\*uk<sup>w</sup>se-* ~ *\*uk<sup>w</sup>so-* (which, however, has been rejected in Doerfer 1963–1975, 1: 539).

As far as genuine Turkic pastoralist terms are concerned, some of them can be easily interpreted as derivatives of a non-agricultural Turkic root, with derivation going back to the Proto-Turkic period. This is, for instance, the case for the following terms:

pTk *\*ogl-a-g* 'kid', which is traditionally explained as a derivative of pTk *\*ogul* 'son, child' (Róna-Tas & Berta 2011: 638–642), but differently in (Tenišev et al. 2001: 430), suggesting derivation from *\*ogla-* 'to shout, to make a racket';

pTk *\*Küri-t* 'a k. of dried quark, cheese', a common derivative of *\*Kür(i)-* 'to dry';

pTk *\*yogurt* 'curdled milk', presumably derived from *yogur-* 'to knead' or a homonymous verb meaning 'to thicken, condense' (Levitskaja et al. 1989).

For almost every root mentioned in this section, etymological parallels in Mongolic, and some in Tungusic, have been proposed previously (see Appendix 1 for supplementary information). Lexical connections between the three branches of Altaic in the domain of pastoralism, with special attention to the distinction between borrowing and inheritance, are further discussed in Section 5.

#### 4. Agricultural vocabulary in Proto-Turkic

It is commonly known that the agricultural component in the Proto-Turkic vocabulary is much smaller than the pastoralist one. Nevertheless, linguistic data clearly show that the Proto-Turkic speakers were familiar with this subsistence pattern as well. The most compelling agricultural terms as reconstructed for Proto-Turkic are the following.

Table 2. Proto-Turkic agricultural vocabulary

Semantic group	Proto-Turkic	Common Turkic
cereals	* <i>darig</i> ‘corn (millet?)’ * <i>ügür</i> ‘millet’ <sup>9</sup> * <i>arpa</i> ‘barley’ * <i>bugday</i> ‘wheat’ <sup>10</sup>	* <i>Konak</i> ‘millet’
grain production	* <i>urug</i> ‘seed’ * <i>ebin</i> ‘grain, (seed)’ *( <i>i</i> ) <i>un</i> ‘flour’	* <i>tögi</i> ‘millet groats’ * <i>etmek</i> ‘bread’
pulses	* <i>burçak</i> ‘bean, pea’	* <i>yasmik</i> ‘lentils’
vegetables	* <i>sogan</i> ‘onion’	
tools and technology	* <i>or-</i> ‘to reap, to harvest (a crop)’ > * <i>orlag</i> ‘sickle’ * <i>kêtmen</i> ‘hoe, mattock’ * <i>sa(r)pan</i> ‘plough’ * <i>ek-</i> ‘to sow’	* <i>tïrmak</i> ‘harrow’ * <i>kerki</i> ‘adze, mattock’ * <i>TArî-</i> ‘to cultivate (ground)’

In Common Turkic, there are several agriculture-related derivatives of a non-agricultural root, e.g., \**tög-i* ‘millet groats’ < \**tög-* ‘to crush, to husk (e.g. grain)’, \**yas-mik* ‘lentils’ < \**yas-* ‘to be(come) flat’, \**tirma-k* ‘harrow’ < \**tirma-* ‘to scratch’. Despite the lack of cognates in the Bulgar branch, it is still possible that some of the derivatives go back to the Proto-Turkic period. Either way, these words cannot be considered as very archaic, but such non-derived verbs as \**ek-* ‘to sow’, \**or-* ‘to reap, to harvest (a crop)’ and \**Tarî-* ‘to cultivate (ground)’, as well as the names for cereals, definitely point to a tradition of agriculture in the Proto-Turkic community.

9. Starostin et al. (2003: 1548) reconstruct pTk \**yügür* that has the meanings ‘millet’, ‘sorghum’, ‘corn, maize’ and ‘a kind of buckwheat’ across the individual languages. However, it is questionable whether one can bring together forms pointing to an initial \**y-*, such as Tat. *jögärä* and Kaz. *žügeri*, and those with an underlying initial vowel (OTurk. *üjür*, Chu. *vir*, etc.). It is interesting that the Turkic forms denoting millet almost never start with a \**y-*; this etymology should be kept separately from *y-*forms that denote other crops.

10. Note also the Turkic word for ‘oats’ (Chu. *səʷləʷ*, Turkm. *süle*, Kaz. *sulï*, *süli* etc.), which, however, demonstrates vowel irregularities and may well be a *Wanderwort* borrowed in different Turkic languages after the family’s split.

It seems essential to discuss in more detail the Turkic names for millet, given the traditionally important role of this crop in the region in question. Three roots, \**ügür*, \**darig* and \**Konak*, meet formal requirements to be regarded as possible terms for millet in Proto-Turkic. Of them, \**ügür* appears to be the most probable candidate for having denoted a kind of millet in the proto-language – it occurs in Chuvash and Yakut, two non-contiguous languages that both separated very early from the main Turkic stock, and it is also attested as ‘millet’ in Old Uyghur texts. Based on the reflexes in the modern Turkic languages, it seems plausible that the Proto-Turkic meaning of the root was ‘broomcorn millet (*Panicum miliaceum*)’. Later on, most Common Turkic languages replaced \**ügür* with \**darig* to denote broomcorn millet. In Chuvash, the latter root is represented as *tirə* ‘cereal, corn’, with a more conservative meaning given to the probable derivation of \**darig* from the verb \**TArī-* ‘to cultivate (ground)’ (i.e., originally ‘that which is cultivated’). In Common Turkic, one can suggest a semantic development of ‘corn’ → ‘broomcorn millet’, implying that the latter was the primary crop produced by the speakers of Common Turkic. The third root, \**Konak*, occurs mainly in Central Asia, particularly in the Karluk branch of Turkic. Its original meaning can be reconstructed as ‘foxtail millet (*Setaria italica*)’ based on the reflexes in modern Turkic languages (along with sporadic ‘sorghum’, ‘maize’ and ‘broomcorn millet’) and Old Uyghur. Despite the old attestation, there is still a question as to whether \**Konak* ‘foxtail millet’ can indeed be reconstructed to the time prior to the split of Proto-Turkic, given that there is no trace of the root in the Bulgar branch and in view of its narrow distribution in general (see Appendix 1 for details).<sup>11</sup>

For all the above terms for cereals, parallels in the other branches of Altaic have been previously proposed. However most of them are rather dubious. For example, pTk \**arpa* ‘barley’ is phonologically compatible with pMo \**arbai* ‘barley’ and Manchu *arfa* ‘barley, oats’, which was long ago interpreted as a Proto-Altaic root (Ramstedt 1952: 90; Poppe 1960: 87). Alternatively, the Turkic form may be regarded as a loan from an Eastern Iranian reflex of pIr \**arbusā* ‘barley’, assuming a subsequent chain borrowing from Turkic to Mongolic and from Mongolic to Manchu. Robbeets (2017: 28) points out that the latter scenario is more consistent with the historical background of barley cultivation in ancient Central and East Asia. Another cereal name of dubious origin is represented by pTk \**bugday* ‘wheat’. An Altaic etymology involving pTg \**murgi* ‘barley’ has been proposed by Starostin (cited in Dybo 1997), but the correspondence between pTk \*-*gd-* and pTg \*-*rg-* is quite irregular. Róna-Tas and Berta (2011: 188) regard pTk \**bugday* as “an old *Kulturword*,” possibly of Indo-European or Chinese origin, but with “no clear

11. An Altaic etymology has been proposed for the root (Starostin et al. 2003: 698), which would consequently confirm its Proto-Turkic status, but the comparison is phonologically problematic.

evidence for either” (see Robbeets 2017: 30–31 for discussion on the connections between pTg \**murgi* ‘barley’ and similar forms in Japano-Koreanic, Indo-European and Old Chinese).

In sum, the originality of the Proto-Turkic terms for broomcorn millet (*Panicum miliaceum*) and foxtail millet (*Setaria italica*) and the equivalence of millet with ‘that which is (generally) cultivated’ contrast with the borrowed nature of the words for ‘barley’ and ‘wheat’. This may indicate that millets were among the original crops cultivated by the speakers of Proto-Turkic.

## 5. Altaic connections of Proto-Turkic pastoralist vocabulary

An attempt at tracing the Altaic origins of Turkic cultural terms is complicated by the fact that it is easy to confuse cognates with later borrowings because of the intensive contacts between the branches of Altaic. Therefore, it is necessary to place tight constraints when estimating the previously proposed Altaic comparisons that involve evidence from Turkic (see the most comprehensive collection in Starostin et al. 2003). In this regard, I sift out the etymological proposals that seem overly permissive semantically and, on the other hand, apply stricter criteria for phonological correspondences, drawing on the idea of Transeurasian phonology provided in Robbeets (2015). Below I discuss parallels between the main pastoralist terms as reconstructed to Proto-Turkic and Mongolic/Tungusic terms, distinguishing between probable fragments of inherited Proto-Altaiic lexicon and borrowings.

As far as the Turkic pastoralist vocabulary is concerned, there is a remarkable group of meanings that falls in part within the restrictions and appears to have reliable Altaic parallels, namely, terms for bovine and equine domestic animals. See for example the following matches:<sup>12</sup>

- pTk \**beye* ‘mare’ < pA \**bej-* ‘a k. of ungulate animal’ > Tung. \**bejü-* ‘an ungulate animal’;
- pTk \**Kulum* ‘foal’ < pA \**kul-* ‘a k. of small equine’ > pMo \**kulan* ‘donkey’;
- pTk \**sigir* ‘cattle’, cf. pTk \**sigun* ‘(male) deer’ < pA \**sig-* ‘deer, horned ungulate’ >  
 pTg \**sig-* ~ \**seg-* ‘wild deer’, ? pMo \**siyenek* ~ \**seyenek* ‘(2-years-old) he-goat’;
- pTk \**būka* ‘bull, ox’ < pA \**muxa-* ‘male’ > pTg \**muxa-* ‘man; male’.

12. For some of the roots presented here and elsewhere in the paper, etymological matches in the other branches of Transeurasian have been previously proposed, but I do not quote them here because of their unreliability.

These examples, excluding the last one, present the interesting semantic development of ‘wild animal’ → ‘domestic animal’. We can assume that this change reflects a shift in subsistence patterns from Proto-Altaic to Proto-Turkic, resulting in the adaptation of hunting terms for the needs of a pastoralist society. It is notable in this respect that agricultural societies in North East China that can be associated with Proto-Altaic, such as the Hongshan, produced millet, but they obtained their protein sources from hunting in the wild (Nelson 1994).

Another question relates to the possible inheritance from Proto-Altaic to Proto-Turkic in the realm of animal husbandry. Under the approach I described above, almost all the Altaic comparisons referring to this field appear to fail on formal grounds. In fact, the only reliable case where borrowing does not appear to be the most likely explanation as compared to inheritance is the parallel between pTk *\*tōrum* ‘young camel (or calf or goatling)’, pMo *\*toruy* ‘young pig’ (but Ord. *torō* ‘young donkey’) and pTg *\*tora-kī* ‘boar (male of a pig)’. In this comparison, phonological correspondences are perfect, and the fact that none of these forms are morphologically identical serves as additional evidence for inheritance rather than borrowing, especially since the Turkic word is indeed borrowed in Mongolic as WMo. *torum*, Kalm. *torm* ‘young camel’. Based on Mongolic and Tungusic, the original meaning ‘pig’ can be reconstructed to Proto-Altaic, implying a shift to ‘camel’, but also to ‘goat’ and ‘calf’ in the Turkic branch. Interestingly, domestic pigs are found along with dogs in early farmer sites in North East China as early as 6000 BC (Larson et al. 2010).

An additional interesting match may correspond to a period after the split of Proto-Altaic, as it involves only the Turkic and Mongolic branches: pTk *\*sag-* and pMo *\*saya-*, both meaning ‘to milk’.<sup>13</sup> Inheritance is more likely than borrowing in this case, given the relatively low borrowability of bare verb roots and the typology of verbal borrowing across the Transeurasian languages, which involves formal accommodation rather than direct insertion (Robbeets 2015). Thus *\*sag-* ‘to milk’ may be reconstructed to Proto-Turko-Mongolic (4600–2800 BC).

Many pastoralist terms shared by Turkic and Mongolic are universally accepted (and relatively late) Common Turkic loans in Mongolic, e.g., Turk. *teke* > Mong. *teke* ‘he-goat’, Turk. *buqa* > Mong. *buqa* ‘bull’, Turk. *buyura* > Mong. *buyura* ‘camel stallion’, Turk. *torum* > Mong. *torum* ‘camel colt’. For its part, Mongolic donated a great deal of its pastoralist terms to Tungusic (see, e.g., Rozycki 1994).

However, there are also a number of Turko-Mongolic parallels in pastoralist vocabularies that are traditionally considered as cognates in Altaic studies but

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13. Tung. *\*saji-ža* (~ -g-) ‘sieve’, which is proposed in (Starostin et al. 2003: 1198) as a cognate for the Turko-Mongolic comparison, cannot be regarded as reliable in view of very different semantics.

cannot be regarded as reliable due to irregular phonology and are more likely to be early borrowings, probably from Proto-Turkic (Pre-Proto-Bulgar, according to Janhunen and some other authors) into Proto-Mongolic. For example, this could be the case for the following roots:

- pTk *\*buřa-gu* ‘calf’ > pMo *\*biragu* ‘id.’;  
 pTk *\*Koč* ‘ram’ > pMo *\*kuča* ‘id.’;  
 pTk *\*Kofi* ‘lamb’ > pMo *\*kurigan* ‘id.’;  
 pTk *\*Kumiř* ‘alcohol milk drink’ > pMo *\*kimur* ‘fermented milk with water’;  
 pTk *\*ayran* ‘a k. of salty yoghurt’ > pMo *\*ayirag* ‘id.’;  
 pTk *\*ingek* ‘cow’ > pMo *\*üniyen* ‘id.’;  
 pTk *\*ökür* ‘bull, ox’ > pMo *\*(h)üker* ‘id.’

The above examples can be compared to the following pairs where phonological irregularities are supplemented by an unexplainable difference in syllable structures: pTk *\*tokli* ‘lamb’ > pMo *\*tugul* ‘calf’, pTk *\*sarik* ‘sheep’ > pMo *\*serke* ‘gelded goat’. Occasionally, it is morphological evidence that suggests borrowing, cf. pTk *\*koř* (~ *\*Koyñ*) ‘sheep’ and pMo *\*koni-n* with an unstable *n* that may originally have functioned as a “class” marker (Janhunen 2012).

A rather difficult case is the parallel between pTk *\*elġek* ‘donkey’ and pMo *\*elġigen* ‘id.’. It demonstrates the non-trivial correspondence pTk *\*ġ* ~ pMo *\*lġ*, which is characteristic of Proto-Altaic. However, the contact scenario is more likely (see Rozycki 1994: 67, involving Manchu *eihen* ‘id.’ as part of the borrowing chain, probably from Turkic into Mongolic and from Mongolic into Tungusic, and recent discussion in Pärpola & Janhunen 2011: 90–94). According to Chinese historical records, domestic donkeys could be found, though quite rarely, in northern China around 2000 BC, but no evidence allows them to be traced back to an earlier period (Han et al. 2014). One more noteworthy comparison is between pTk *\*at* ‘horse’ to pMo *\*aduyu* ‘id.’. Although it is technically possible to reconstruct pA *\*at-* ‘horse’, the unexplainable segmentation of the Mongolic form is indicative of borrowing in this case, perhaps from a morphologically complex Turkic form. Archaeological evidence indicates that horses did not appear in the Western Liao river valley until the Lower Xiajiadian period (2000–1500 BC), which is at least 1000 years later than the Hongshan period (see Robbeets 2017: 32 for the horse in East Asia and the borrowing of another horse term). Given this, it is still preferable to attribute the lexical parallel to a later contact between the branches.

To sum up, most pastoralism-related terms in Proto-Turkic seem to be of secondary origin. Some of them are transmitted as loanwords from a non-Transeurasian language or developed through internal derivation as shown in Section 3. In



other cases, they can be shown to have developed from a term for the original wild predecessor in Proto-Altaic (e.g., ‘deer’ > ‘cattle’). The only reliable case where the term for a domestic animal in Turkic goes back to such a term in Proto-Altaic is \**tor(u)*- ‘pig’. It is striking that ‘pig’ is the only name for a domestic animal that can be reliably reconstructed to Proto-Altaic, as it is an animal that is associated with the agricultural societies in Northeast Asia and not with nomadic pastoralism. All this evidence seems to suggest that the Turkic people shifted from a subsistence pattern involving pig raising, millet cultivation and wild animal hunting to a pattern based on horse-riding pastoralism.

## 6. Altaic connections for Proto-Turkic agricultural vocabulary

Compared to the Proto-Turkic pastoralist lexicon, its agricultural vocabulary is limited and, consequently, one would not expect to find many such terms derived from Proto-Altaic. Yet, a few interesting correlations are worth discussing.

The only plausible parallel that is present in all three branches of Altaic is represented by pTk \**TAr*- ‘to cultivate (land)’, pMo \**tari*- ‘to sow, to plant, to plough’ and pTg \**tari*- ‘to cultivate’. It is often thought that the Turkic word was borrowed into Written Mongolic as *tari*-, from which it entered Tungusic, i.e., Evk. *tari*- ~ *tare*-, Solon *tari*-, Manchu *tari*-, Nanai *tari*-, Ulcha *tari*- ‘id.’ (Doerfer 1963: 244–245; Rozycki 1994: 203). However, it can be argued that this is in fact a Proto-Altaic agricultural term (pA \**tari*- ‘to cultivate land’). In addition to the arguments mentioned for \**sag*- ‘to milk’ in Section 5, a chain borrowing scenario for a naked verb root is cross-linguistically rather uncommon (Robbeets 2015). The inherited status of the root can be further supported by the fact that the representations of \**tari*- in each family are involved in productive derivational processes (cf. such derivatives as pTk \**darig* ‘corn’ > ‘millet’, pMo *tariyan* ‘crops’ and Evk. *tariyan* ‘bread’).

A less striking comparison involves pTk \**or*- ‘to reap, harvest, mow’ and pTg \**oro-kta* ‘(dry) grass, hay’ (Starostin et al. 2003: 1063–1064), where \**-kta* is a collective suffix. The correlation would be more direct if we assume that the Tungusic form is of verbal origin (\**oro*- ‘to graze, pasture, mow’?), cf. maybe pTg \**oro-n*, PL. *oro-r* ‘domesticated reindeer’. Even if the hypothesis on Altaic connections does not stand up to scrutiny, it is still interesting that the Turkic verb for harvesting has a very simple morphological structure and does not appear to be derived or borrowed. For a similar case, one can look to pTk \**ek*- ‘to sow’, which has no reliable Altaic connections established, but must have belonged to non-derived and non-borrowed lexicon of Proto-Turkic. It is also telling that the main Turkic names for millets, \**ügür* ‘broomcorn millet’ and \**Konak* ‘foxtail millet’, have a quite different historical background as compared to those for other cereals. While \**arpa*

‘barley’ and \**bugday* ‘wheat’ are often regarded as wanderwörter, there are no clear indications that the Turkic names for millets were borrowed from outside. Moreover, \**Konak* itself may have been borrowed into Written Mongolian as *qonuy* ‘millet’ (Starostin et al. 2003: 698).

As for the other agricultural terms in Proto-Turkic, few of them can be reliably connected to the other branches of Altaic. Even look-alikes that appeared as a result of early borrowing are much less numerous in the field of agriculture as compared to pastoralism. A rare reliable example of such borrowing is the case of pTk \**burčak* ‘bean, pea’ and pMo \**buyurčag* ‘id.’. The forms are undeniably related, but they hardly can be explained in terms of genetic affinities. Thus borrowing (possibly from Mongolic to Turkic, given that the Mongolic form is more complex) is very likely. This can be compared to the parallel between pTk \**sogan* ‘onion’ and pMg \**songina* ‘id.’, where the exact direction of borrowing, probably involving other East Asian languages, is unclear (Starostin et al. 2003: 1303).

In some cases, such as that represented by the parallel between pTk \**urug* ‘seed’ and pMg \*(h)*üre* ‘id.’, the difference between the Turkic and Mongolic form is such that the resemblance may just be coincidental.

To summarize, I have investigated the origin of Proto-Turkic agricultural and pastoralist vocabularies. While there are indications that the majority of the Turkic pastoralist vocabulary is internally coined, borrowed from a non-Transeurasian language, inherited from names for wild predecessors or fragments of agricultural vocabulary, I found less indications for the secondary nature (i.e., borrowing, derivation or lexical recycling) of agricultural terms, such as ‘millet’. Basic agricultural activities, such as ‘to harvest’, ‘to sow’ and ‘to cultivate’ also seem to be unborrowed and underived. Except for the verb ‘to cultivate’, the word for ‘pig’ (see Section 5) and a vague connection for ‘to harvest’, I did not reveal reliable Altaic connections for Turkic agricultural words. However, agricultural core-vocabulary seems to preserve more Altaic cognates than the lexicon of pastoralism does, although the latter is far better represented in Turkic. Further, the Turkic pastoralist vocabulary has a more secondary nature than the agricultural one. In general, the very limited number of agricultural terms reconstructible to Proto-Altaiic as compared to the preceding Proto-Transeurasian period (see Robbeets 2017; this volume) can be attributed to a loss of farming-related lexicon in the daughter languages over time after the break of Altaic; they may have lost the words along with the tradition after climate change and shift to pastoralism.

## 7. Conclusions

In this study, I have provided a historical linguistic discussion of the subsistence-related activities that can be assigned to the Proto-Turkic speakers and to their Proto-Altai predecessors. I established that, along with a rich and complex pastoralist vocabulary, a number of agricultural terms can also be reconstructed to Proto-Turkic. The Turkic names for ‘barley’ and possibly ‘wheat’ may be borrowings in Proto-Turkic, but millet seems to be very prominent given that it is referred to as “that what is cultivated (= the main crop)”. It is likely that two kinds of millet, broomcorn and foxtail, were distinguished linguistically by the speakers of Proto-Turkic. The Proto-Turkic agricultural vocabulary also includes terms for such basic activities as ‘to sow’, ‘to harvest’ and ‘to cultivate’, and all seem to be archaic.

This study can support the identification of Proto-Turkic with the Xiongnu, as the proportion of pastoralist to agricultural terms in Proto-Turkic is consistent with what we know about the agricultural component in the Xiongnu archaeological record.

Subsistence-related terms in Proto-Turkic differ in their origins. Some of them are borrowed from a non-Transeurasian language, such as pTk \**dāna* ‘heifer’ and \**arba* ‘barley’, and some are internally coined.

Both pastoralist and agricultural vocabularies in Proto-Turkic are in part similar to those in Mongolic and Tungusic languages. However, while the similarities between the pastoralist terms are almost exclusively due to borrowing, agricultural vocabularies of the branches seem to share a few items inherited from Proto-Altai. In most cases, it was possible to distinguish between borrowing and inheritance due to linguistic indications, such as phonological and semantic differences, morphological complexity in one language but not in the other, etc. In general, we found no Altai reconstructions pointing to pastoralism in the Proto-Altai period, while a few Proto-Altai etymologies are reconcilable with an agricultural lifestyle.

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## Abbreviations

Chu	Chuvash	pJ	Proto-Japonic
CT	Common Turkic	pK	Proto-Koreanic
Kalm.	Kalmyk	pMo	Proto-Mongolic
Kaz.	Kazakh	pTk	Proto-Turkic
Khot.	Khotan Saka	pToch.	Proto-Tocharian
K	Korean	pTg	Proto-Tungusic
Ord.	Ordos Mongolian	Tkm.	Turkmenian
pA	Proto-Altaiic	Uig.	Uighur
pIE	Proto-Indo-European	WMo.	Written Mongolian
pIr	Proto-Iranian		

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## Appendix 1. Forms underlying the reconstructed Proto-Turkic roots and their Altaic connections

### \**aran* ‘shed, stable’

Karakh. *aran* 1 (MK); Turk. *aram* (dial.) 3; MTurk. *aran* 1 (Sangl.); Krm. *aran* 3; Tat. *aran* 1; Bashk. *aran* 1, Kaz. *aran* 3; Kum. *aran* 1; Nogh. *aran* 3; Yak. *araņas* (< \**aran-gač*, Dimin.) 4, dial. *arān* ‘место, на котором стоит чум, палатка’; Dolg. *araņas* 4 (Starostin *et al.* 2003: 1123–1124).  
‘shed 1, stable 2, fold 3, store-room 4’

### \**arpa* ‘barley’

OTurk. *arpa* (OUygh.), *abra* (late OUygh.); Karakh. *arpa* (MK, KB); Tur. *arpa*; Gag. *arpa*; Az. *arpa*; Turk. *arpa*; Sal. *arfa* (CCЯ 292); Khal. *arpa*; MTurk. *arpa* (Sangl.); Uzb. *arpa*; Uig. *a(r)pa*; Krm. *arpa*; Tat. *arpa*; Bashk. *arpa*; Kirgh. *arpa*; Kaz. *arpa*; KBalk. *arpa*; KKalp. *arpa*; Kum. *arpa*; Nogh. *arpa*; Khak. *arba*; Oyr. *arba*; Chu. *orba*; Bulg. > Hung. *árpa* (Starostin *et al.* 2003: 313).

Probably an IE loanword, see Robbeets 2017. Cf. PMo \**arbay* ‘barley’: MMong. *arbəi* (HY 8), *arbāi*, *ārbāi* (MA 104, 253); WMo. *arbai* (L 49); Kh. *arvay*; Bur. *arbay*; Kalm. *arwā*, *arwā*; Ord. *arwā*; Mog. *arfei*, *arfā*; Dong. *apa*; Ma. *arfa* ‘barley; oats’; OJap. *apa* ‘millet’.

### \**at* ‘(riding) horse’

OTurk. *at* (Orkh., Yen., OUygh.); Karakh. *at* (MK, KB); Tur. *at*; Gag. *at*; Az. *at*; Turk. *at*; Sal. *at*, *ac*; Khal. *hat*; MTurk. *at*; Uzb. *ət*; Uig. *at*; Krm. *at*; Tat. *at*; Bashk. *at*; Kirgh. *at*; Kaz. *at*; KBalk. *at*; KKalp. *at*; Kum. *at*; Nogh. *at*; SUIg. *a't*; Khak. *at*; Shr. *at*; Oyr. *at*; Tv. *a't*; Chu. *ut*; Yak. *at*; Dolg. *at* (Starostin *et al.* 2003: 317).

Probably a derivative of \**at* is represented by \**adgır* ‘stallion’: OTurk. *adyır*; Karakh. *adyır*, *ayyır*, Chag. *ayyır*; Kirgh. *ayyır*; Alt. *ayyır*; Uzb. *ayyır*; Uigh. *ayyır*; S.-Yugh. *azyır*; Khak. *asxır*; MChul. *asqır*; Tuv. *asqır*; Tof. *asqır*; Yak. *atī:r*; Dolg. *atī:r*; Chu. *əyər* (Tenišev *et al.* 2001: 442–443).

Cf. PMo \**aduyun* > MMong. *adusun* ‘horse(s)’, etc. (possibly < Turkic).

**\*ayran** ‘a k. of salty yoghurt’

Karakh. *ayran* (MK); Tur. *ayran*; Az. *ayran*; Turkm. *ayran*; Uzb. *ayran*; Uig. *ayran*; Krm. *ayran*; Tat. *eyren*; Bashk. *ayran*; Kirgh. *ayran*; Kaz. *ayran*; KBalk. *ayran*; KKalp. *ayran*; Kum. *ayran*; Nogh. *ayran*; Khak. *ayran*; Oyr. *ayran*; Chu. *uyran*, dial. *ufan*, *oren* (Anatri) (Starostin et al. 2003:280).

Cf. PMo \**ayirag* ‘id.’: MMong. *aiyirax* (HY 25); WMo. *ayiray* (L 21); Kh. *ayrag*; Bur. *ayrag*; Kalm. *āræg*; Ord. *āraq*; Dag. *airag* (possibly < Turkic).

**\*beye** ‘mare’

OTurk. *be* (OUig. – YB); Karakh. *be* (MK, IM); MTurk. *beye* (Sangl.); *bej* (CCum.); Uzb. *biya*; Uig. *biya* (dial.); Krm. *biye*; Tat. *biye*; Bashk. *beya*; Kirgh. *bē*; Kaz. *biye*; KKalp. *biye*; Nogh. *biye*; SUig. *pie*, *pi*; Khak. *pī*; Oyr. *bē*; Tv. *be*; Yak. *bia* (Starostin et al. 2003:335–336).

**\*botu** ‘young of camel’

Karakh. *botu* (MK); Tur. *potak* (dial.); Az. *pota* ‘young of buffalo, bear’; MTurk. *bota* ‘child; young of animal’ (Abush., Sangl.); Uzb. *boṭa*; Uig. *bota*; Krm. *bota*; Tat. *buta*; Bashk. *buta*; Kirgh. *boto*; Kaz. *bota*; KKalp. *bota*; Nogh. *bota* (Starostin et al. 2003:901–902).

**\*bugday** ‘wheat’

OUig. *buyday*; Karakh. *buyday*; Chag. *buyday*; Tur. *buyday*; Turkm. *buyday*; Gag. *bo:day*; Az. *buyda*; Khal. *buyda*; Sal. *boyde*, *pojde*, *poyce*, *poytar*; Kar. *boyday*, *buday*; KBalk. *buday*; Kum. *buday*; Tat. *boday*; Bashk. *boyday*; Nogh. *biyday*; KKalp. *biyday*; Kaz. *biyday*; Kirgh. *bu:day*; Oyr. *pu:day*; Uzb. *buyday*; Uigh. *buyday*; Khak. *puyday*; Chul. *puday*; ? Chu. *pəri* ‘smelt’.

A Wanderwort of unclear origin (Róna-Tas and Berta 2011:188).

**\*bugu** ‘deer male’ > **\*bugu-ra** ‘camel stallion’

OTurk. *buyu* 1 (13th c.), *buyura* 2 (Orkh.); Karakh. *buyra* 2 (MK); Tur. *buyur* 2, dial. *buyu* 1; Az. *buyur* 2; Turkm. *buyra* 2; MTurk. *buyu* 1, *buyra*, *buyur* 2 (Pav. C.); Uzb. *buyu* 1; Uig. *buyu* 1, (dial.) *buyra*, *boyra* 2; Kirgh. *būra* 2; Kaz. *bura* 2; KBalk. *bū* 1; KKalp. *buwra* 2; Nogh. *bora* 2; SUig. *pīrya* 2; Oyr. *bura* 2; Tv. *būra* 2, *būr* ‘male elk’; Yak. *būr* ‘male reindeer, male’; Dolg. *būr* ‘male reindeer’ (Starostin et al. 2003:1102).

‘deer male 1, camel stallion 2’

**\*būka** ‘bull’

OTurk. *buqa* (Orkh., OUygh.); Karakh. *buqa* (MK, KB); Tur. *boa*; Gag. *buya*, *bua*; Az. *buGa*; Turkm. *buGa*; MTurk. *buya* (Sangl.); Uzb. *buqa*; Uig. *buya*, *buqa*; Krm. *buya*; Tat. *buya* (dial.); Bashk. *buya*; Kirgh. *buqa*; Kaz. *buqa*; KBalk. *buya*; KKalp. *buya*; Kum. *buya*; Nogh. *buya*; SUig. *puqa*; Khak. *puya*; Shr. *puya*; Oyr. *buqa*; Tv. *buya*; Tof. *buxa*; Yak. *buga* (Starostin et al. 2003:951).

Probably a Proto-Altaiic root, cf. pTg \**muxa-* / \**muxe-* ‘man 1, male 2’: Neg. *muxeti* 2; Man. *muxan* 2; Nan. *moḡa(n)* 1, 2; Orch. *mueti* 2; Ud. *mugeti*, *mueti* 2.

**\*buʻa-gu** ‘calf’

OTurk. *buzayu* (OUygh.); Karakh. *buzayu* (MK, IM); Tur. *buzayu*; dial. *buza-* ‘to bear a calf’, Osm. *buza-la-* ‘id.’; Gag. *buzā*; Az. *bizov*; Turkm. *buzaw*; Sal. *puzo*, *pūzi* (CCЯ 457); MTurk. *buzayu*, *buzay*, *buzaw* (Sangl., MA, Pav. C.); Uzb. *buzoq*; Uig. *mozay*; Krm. *bizuv*, *buzuv*; Tat. *bizaw*; Bashk. *biḏaw*; Kirgh. *muzō*; Kaz. *buzau*; KBalk. *buzow*; KKalp. *buzaw*; Kum. *buzaw*; Nogh. *buzaw*; Khak. *pīzo*; Shr. *puza* (R); Oyr. *bīza*; Tv. *bizā*; Chu. *pᵝʷru* (Starostin et al. 2003:353–354).



Cf. PMo \**birayu* ‘calf (1 year old)’: MMong. *burā’u* (SH), *buru* (MA); WMo. *birayu* (L 106); Kh. *barū*; Bur. *burū*; Kalm. *burū*; Ord. *birū* ‘calf (2 year old)’, Mog. ZM *borɔyol* (20–8), KT *borwol* (20–6); Mongr. *burū* (SM 36) (probably < Turkic).

\**burčak* ‘bean, pea’

OTurk. *burčaq* (OUygh.); Karakh. *burčaq* (MK); Tur. *burčak*; Gag. *borčaq*; Turkm. *burčaq*; MTurk. *burčaq* (Sangl.); Uzb. *burčaq*; Uig. *počaq*; Krm. *burčax*; Tat. *borčaq*; Bashk. *borsaqa*; Kaz. *buršaq*; KBalk. *burčaq*; KKalp. *buršaq*; Kum. *burčaq*; Nogh. *buršaq*; SUig. *pirčaq*; Shr. *mirčaq*; Oyr. *mirčaq*; Chu. *pʷrʷza*, *pʷrʷze* (Starostin et al. 2003: 380).

Cf. Mong. \**burčag* ~ \**buyurčag* ‘pea’ (probably Mongolic > Turkic).

\**bün-* ~ \**bīn-* ‘to mount a horse, ride on’

OTurk. *bin-* (Orkh.), *mün-* (OUygh.); Karakh. *mün-* (MK, KB); Tur. *bin-*; Gag. *pin-*; Az. *min-*; Turkm. *mün-*; *mīn-* (dial.); Sal. *min-*, *mim-*, *miŋ-* (CCЯ); MTurk. *min-* (Sangl.); Uzb. *min-*; Uig. *min-*; Krm. *min-*; Tat. *men-*; Bashk. *men-*; Kirgh. *min-*; Kaz. *min-*; KBalk. *min-*; KKalp. *mīn-*; Kum. *min-*; Nogh. *min-*; SUig. *min-*; Khak. *mün-*; Shr. *mün-*; Oyr. *min-*; Tv. *mün-*; Tof. *mün-*; Chu. *minder* ‘pillow’; Yak. *mīn-*; Dolg. *mīn-* (Starostin et al. 2003: 1110).

\**čōčka* ‘young pig’

Karakh. *čočuq* (MK) 1; Tur. *čožuk* 2; Gag. *čožuq* 2; Az. *čošGa* 1, 3; Turkm. *žōžuq* 1 (cf. *colloq. čōča* ‘camel’); MTurk. *čočya* 1 (Sangl.), (OKypch.) *čočqa* (Houts.) 1; Uzb. *žužuq* 2; Uig. *čošqa* 3; Krm. (K) *čočqa* 3, *čočuq jatayī* ‘afterbirth’; (T) *čočxa* ‘young boy (not a Karaim)’, (H) *cocka* 2; Tat. *čučqa* 3; Bashk. *sosqa* 3; Kirgh. *čočqo* 1; Kaz. *šošqa* 1; KBalk. *čočxa* 3; KKalp. *šošqa* 3; Kum. *čočqa* 3; Nogh. *šošqa* 3; Khak. *sosxa* 3; Shr. *šošqa* 3; Oyr. *čočqo* 3; Tv. *šošqa* 3 (Starostin et al. 2003: 1335).  
‘young pig 1, child, boy 2, pig 3’

\**dāna* ‘(two-years-old) heifer’

MKypch. *tana* 1; Chag. *tana* 2; Tur. *dana* 1; Gag. *dana* 2; Az. *dana* 1, Turkm. *tāna* 1; Sal. *tana* 3; Kar. *tana* 1; Kum. *tana* 2; KBalk. *tana* 2; Tat. *tana* 2; Nogh. *tana* 3; KKalp. *tana* 3; Kaz. *tana* 1; Kirgh. *tana* 3; Chu. *tina* 3 (Dybo 2007: 116–117).

‘calf 1, calf (two-years-old) 2, heifer 3’

< probably East Iranian, see (Bailey 1979: 159).

\**darig* ‘corn’ > ‘broomcorn millet’

OTurk. *tariy* (OUygh.) 2, 3; Karakh. *tariy* (MK) 2, 3; MKypch. *tariy* 1; Tur. *dari* 1; Gag. *dari* 1; Az. *dari* 1; Turkm. *dari* 1; Sal. *dari*; MTurk. (MKypch.) *tari* (CCum., AH); Uzb. *tariq* 1; Uig. *teriğ* 1; Kar. *tari*, *dari* 1; Tat. *tari* 1; Bashk. *tari* 1; Nogh. *tari* 1; Kaz. *tari* 1; Kirgh. *taru*: 1; KBalk. *tari* 1; Kum. *tari* 1; Khak. *tariy* 4; Chu. *tir̄* 2; Bulg. > Hung. *dara* ‘grain, groats’ (Tenišev et al. 2001: 456–458; Starostin et al. 2003: 1356).

‘proso (broomcorn) millet 1, corn 2, cultivated land 3, sowing 4’

Possibly a derivative of \**TArī-* ‘to cultivate (ground)’.

\**debe* ‘camel’

OTurk. *tebe* (Orkh.), *teve* (OUygh.); Karakh. *teve* (*tevey*) (MK); Tur. *deve*; Gag. *devä*; Az. *devä*; Turkm. *düye*; Sal. *töye*, *töivä*, *tüvi*; MTurk. *deve* (Pav. C.), *teve* (Abush., Pav. C.); Uzb. *tuya*; Uig. *tögä*; Krm. *tüye*, *deve*; Tat. *düyä*; Bashk. *düyä*; Kirgh. *tō*; Kaz. *tüye*; KBalk. *tüye*; KKalp. *tüye*; Kum. *tüye*; Nogh. *tüye*; SUig. *te*, *tī*; Khak. *tibe*; Oyr. *tō*, *tebe*; Tv. *teve*; Tof. *tebe* (Pac. Фил); Chu. *təʷve*; Yak. *taba* ‘deer’; Dolg. *taba* ‘deer’ (Starostin et al. 1424–1425).

Cf. PMo \**teme-yen* ‘camel’: MMong. *teme'en* (SH), *temeyen* (HY 11), *temē* (IM), *təmēn* (LH), *təmən*, *timen* (MA); WMo. *temege(n)* (L 800); Kh. *temēn*; Bur. *temē(n)*; Kalm. *temēn*; Ord. *temē(n)*; Mog. *temə* (Weiers); Dag. *temē* (Тод. Дар. 166, MD 223); S.-Yugh. *temen*; Mongr. *timēn* (SM 420), *təmēn* (possibly < Turkic).

\**doɣuɾ* ‘pig’

OTurk. *toɣuz* (OUygh.); Karakh. *toɣuz* (MK); Tur. *domuz*; Gag. *domuz*; Az. *donuz*; Turkm. *doɣuz*; Sal. *toɣas*; MTurk. *toɣuz* (Sangl.); Uzb. *toɣyis*; Uig. *toɣyuz*; Krm. *toɣyuz*, *domuz*; Tat. *duɣyiz*; Kirgh. *doɣuz*; Kaz. *doɣiz*; KBalk. *toɣyuz*; KKalp. *doɣiz*; Kum. *doɣyuz*; Nogh. *doɣiz*; SUig. *doɣiz* (Starostin et al. 2003: 1355).

\**dorak* ‘a k. of cheese or quark’

Chag. *doraq*, Khal. *tuoraq*, Turkm. *doraq*, Tur. dial. *torak*, *dorak*; Chu. *tora*, *təwara*; Bulg. > Hung. *turo* ‘quark’ (Dybo 2007: 117);  
< Mlr. \**tura-ka* (Bailey 1979: 132).

\**ebin* ‘grain, seed’

OTurk. *evin* (OUygh.); Karakh. *evin* (MK, KB); Tur. Osm. *evin*, Anat. *efin*; MTurk. *evin* (Qutb); Oyr. *ebin*; Chu. *avən šap-* ‘to flail’, *avən karti* ‘cornfloor’ > Mari (Low) *avən*, Mari (High) *en* (Starostin et al. 2003: 578).

\**ečkü* ‘(she-)goat’

\**ečki* (Sevortijan et al. 1974–2003, 3: 34–35), \**äžikä* > \**äčki* (Tenišev et al. 2001: 426–427), \**ečkü* (Dybo 2007: 123)

OUig. *äčkü*; Karakh. *äčkü*; MKypch. *äčki*; Khal. *äčgü*, *äččü*; Kar. *äčki*; KBalk. *äčki*; Kum. *äčki*; Nog. *äški*; KKalp. *äški*; Kirgh. *äčki*; Alt. *äčki*; Uzb. *äčki*; Uigh. *öčkä*, *äčkü*; Khak. *öski*; Tuv. *ö'škü*; Tof. *ö'skü* (Tenišev et al. 2001: 426–427).

The root is often confused with another word for ‘(she-)goat’, \**geče* (~ *geči*) (see).

\**edɣer* ‘saddle’

Karakh. *eder* (MK); Tur. *eyer*; Gag. *yēr*; Az. *yähär*; Turkm. *eyer*; Sal. *eɣer* (Kakuk); MTurk. *eɣer*; Uzb. *egar*; Uig. *egə(r)*; Krm. *yer*; Tat. *iyer*; Bashk. *eyär*; Kirgh. *ēr*; Kaz. *er*; KBalk. *iyer*; KKalp. *yer*; Kum. *er*; Nogh. *iyer*; SUig. *ezer*; Khak. *izer*; Shr. *ezer*; Oyr. *ēr*; Tv. *ezer*; Tof. *e'zer* (Pac. Фил 183); Chu. *yəner*; Yak. *ijir*; Dolg. *ijir* (Starostin et al. 2003: 506).

\**ek-* ‘to sow’

OTurk. *ek-* (Late OUygh.) 1; Karakh. *ek-* (MK, KB) 1, 2; Tur. *ek-* 1; Gag. *ek-* 1; Az. *äk-* 1, 2; Turkm. *ek-* 1; Sal. *ex-* 1; Khal. *häk-* 1; MTurk. *ek-* (Abush., Sangl.) 1; Uzb. *ek-* 1; Uig. *ek-* 1; Krm. *ek-* 1; Tat. *ik-* 1; Bashk. *ik-* 1; Kirgh. *ek-* 1; Kaz. *ek-* 1; KKalp. *ek-* 1; Nogh. *ek-* 1; Chu. *ak-* 1 (Starostin et al. 2003: 1132).

‘to sow 1, to scatter 2’

\**ełgek* ‘donkey’

OTurk. *ešgek* (OUygh.); Karakh. *ešgek*, *ešyek* (MK); Tur. *ešek*; Gag. *iešek*; Az. *eššäk*; Turkm. *ešek*; MTurk. *ešek* (Бор. Бад., Abush., Pav. C.); Uzb. *ešäk*; Uig. *ešäk*; Krm. *ešek*; Tat. *išäk*; Bashk. *išäk*; Kirgh. *ešek*; Kaz. *esek*; KBalk. *ešek*; KKalp. *ešek*; Kum. *ešek*; Nogh. *ešek*; Oyr. *ešte*; Chu. *ažak* (Starostin et al. 2003: 503).

Cf. PMo \**elžigen* ‘donkey’: MMong. *elžigan* (HY 9), *ülžige* (IM), *ilžigen* (LH), *ilžigän* (MA); WMo. *elžige(n)* (L 311); Kh. *ilžig*, *ilžigen*; Bur. *elžege(n)*; Kalm. *elžyne*, *elžynə*; Ord. *elžige(n)*; Mog. *elžiyōn*; Dong. *enžeye* (Тод. Дн.); Bao. *nžige* (Тод. Бн.); Ma. *eihen* (possibly Turkic > Mongolic > Tungusic).

\**erkeč* ‘gelded he-goat’

OUIg. *ärkäč* 1; Karakh. *ärkäč* 1, 6; MKypch. *ärkäč* 1, 2; Tur. *ärkäč* 1, dial. *ärgäč*, *ürgäč*, *ärgäs* 2; Az. dial. *ärkäč* 2; Turkm. *ärkäč* 4; KBalk. *ärkäč* 3, 6; Kum. *ärkäč* 5; Kirgh. *ärkäč* 2, 6 (Tenišev et al. 2001: 428–429).

‘he-goat 1, gelded he-goat 2, (three years old) he-goat 3, (two years old) he-goat 4 (one year old) goat 5, bellwether 6’.

\**etmek* ‘bread’

OTurk. *ötmek* (OUygh.); Karakh. *etmek* (MK), *epmek* (MK – Oghuz, Qypch.); Tur. *etmek*, *ekmek*; Gag. *iekmek*; Az. *äppäk*; Turkm. (dial.) *ekmek*, *epmek*; MTurk. *etmek*, *ötmek* (Pav. C.); Krm. *ekmek*, *etmek*, *ötmek*; Tat. *ikmäk*; Bashk. *ikmäk*; KBalk. *ötmek*; Kum. *ekmek*; Nogh. *ötpek*; Khak. *ipek*; Shr. *itpäk*; Oyr. *ötpök* (Starostin et al. 2003: 594).

Cf. PMo \**ide*- ‘to eat’.

\**geče* (~ *geči*) ‘(she-)goat’

\**geči* (Sevortjan et al. 1974–2003, 3: 34–35), \**käči* (Tenišev et al. 2001: 426–427), \**geče* (Dybo 2007: 123)

Chu. *Kaža-ga* 1; Bulg. > Hung. *kecske* 1; Turkm. *geči* 1; Tur. *keči*, dial. *geči* 1, 2; Az. *keči* 1, 2; Gag. *keči* 1; Karakh. *käči*; MTurk. *käči*; Tat. *käjä* 1; Bashk. *käzä* 1; Uzb. dial. *geji* 1 (Tenišev et al. 2001: 426–427).

‘(she)goat 1, he-goat 2’

The root is often confused with another word for ‘(she-)goat’, \**ečkü* (see).

\**göpe-ne* ‘haystack’

Tur. *geben*; Tat. *kübe*; Bashk. *kübe*; Kum. *keben*; Tv. *xöpēn*; Chu. *koba* (Starostin et al. 2003: 723).

Delabialization of \**ö* in some languages is secondary.

\**ingek* ‘cow’ and \**ingen* ‘female camel’

OTurk. *ingek* (Orkh., OUygh.) 1, *ingen* 2 (OUygh.); Karakh. *ingek* 1, *ingen* 2 (MK); Tur. *inek* 1; Gag. *inek* 1; Az. *inäk* 1; Turkm. *inek* 1, *inen* 2; MTurk. *inek* 1 (AH), *inen* 2 (Pav. C.); Uzb. *inäk*, *inäy* 1 (dial.); Uig. *inäk* 1, (dial.) *ingan*, *ingan* 2; Krm. *inek* 1; Tat. *inäk* 1 (dial.); Kirgh. *inek* 1, *ingen* 2; Kaz. *inek* 1, *ingen* 2; KBalk. *inek*, *inyek* 1; KKalp. *ingen* 2; Kum. *inek* 1; SUig. *inek*, *enek* 1; Khak. *inek* 1; Shr. *inek*, *näk* 1; Oyr. *inek*, *inyek* 1; Tv. *inek* 1, *engin* 2; Chu. *əne* 1; Yak. *inax* 1 (Starostin et al. 2003: 619).

‘cow 1, female camel 2’

Cf. PMo \**üniyen* ‘cow’: MMong. *umi'en* (SH), *uneyen* (HY 11); WMo. *üniye(n)* (L 1010); Kh. *ünēn*; Bur. *ünē(n)*; Kalm. *ünē*, *ünēn*; Ord. *ünē(n)*; Mog. *ünä*; Dag. *unē*, (Тод. Даг. 171) *unē*; Bao. *unan*; S.-Yugh. *nīn*; Mongr. *unē* (SM 472) (probably < Turkic).

\*(*i*)*un* ‘flour’

Karakh. *un*; MKypch. *un*; Chag. *un*; Tur. *un*; Gag. *un*; Az. *un*; Khal. *hu:n*; Turkm. *u:n*; Kar. *un*; KBalk. *un*; Kum. *un*; Tat. *on*; Bashk. *on*; Nogh. *un*; KKalp. *un*; Kaz. *un*; Kirgh. *un*; Uzb. *un*; Uigh. *un*; Khak. *un*; ? Chu. *śənəχ* (Tenišev et al. 2001: 471).

**\*kerki** ‘adze, mattock’

Karakh. *kerki* (MK) 1, *kerey* (MK) 2; Tur. *kerki* 1; Az. *kārki*, *kerki* (dial.) 1; Turkm. *kerki* 1; MTurk. *kerki* (IM, AH) 1; Uig. *keke*, *kerke* (dial.) 1; Kirgh. *kerki* 1; Oyr. *kerki* 1; Tv. *keržek* ‘adze’; Chu. *karə* ‘chisel’ (Starostin et al. 2003:791).

‘adze, mattock 1, razor 2’

**\*kētmen** ‘hoe, mattock’

OTurk. *ketmen* (OUigh.); Karakh. *ketmen* (MK); Tur. *gedmen*; Az. *kātmān*; Turkm. *kātmen*; MTurk. *ketmen* (Sangl.); Uzb. *ketmən*; Uig. *kātmān*; Bashk. *kātmān*; Kirgh. *ketmen*-; Chu. *katmak* (Starostin et al. 2003:810).

The root is usually derived from \*gēt- ‘to notch’ but the Oghuz languages systematically distinguish \*g- in ‘notch’ and \*k- in ‘hoe’.

**\*kidir** ‘felt’

OTurk. *kidiz* (OUygh.); Karakh. *kidiz* (MK, KB); Tur. *kiyiz*, *keyiz* (dial.); Turkm. *kiz*; MTurk. *kiyiz* (IM, Abush., Qutb., Houts.); Uzb. *kigiz*; Uig. *kigiz*; Tat. *kiyez*; Bashk. *keyed*; Kirgh. *kiyiz*; Kaz. *kiyiz*; KBalk. *kiyiz*; KKalp. *kiyiz*, *kiygiz* (dial.); Kum. *kiyiz*; Nogh. *kiyiz*; Khak. *kis*; Oyr. *kiyis*; Tv. *kidis* (Starostin et al. 2003:846).

Turk. > MMong. *kiyiz* (Шербак 1997:127).

**\*Koč** ‘ram’

Turk. > Hung. *kos*; OUig. *qočqar*, *qočunjar*; Karakh. *qočnar*; Tur. *koč*, *kočkar*; Gag. *qoč*; Az. *Goč*; Turkm. *Goč*, *GočGar*; Sal. *qošqor*, *qošqur*; Khal. *Goč*; MTurk. *qoč*, *qočqar*; Uzb. *yoč* (dial.), *qočqar*; Uig. *qočqa(r)*, *qošqa(r)*; Krm. *qoč*, *qočqar*, *qočxar*; Tat. *qučqar* (dial.); Bashk. *qušqar*; Kirgh. *qočqor*; Kaz. *qošqar*; KBalk. *qocxar*; KKalp. *yoš*, *qošqar*; Kum. *qočqar*; Nogh. *qošqar*; SUig. *qužyar*; Oyr. *qočqor*; Tv. *qošqar* (Starostin et al. 2003:711–712).

Cf. PMo \*kuča ‘ram’: MMong. *xuča*, *qāca* ‘lamb’, *quča*; WMo. *quča*; Kh. *xuc*; Bur. *xusa*; Kalm. *xucə*; Ord. *Guča*; Dag. *koč*; Dong. *quža*; S.-Yugh. *quža*; Mongr. *xuž’a*, *xuža* (possibly < Turkic).

**\*Kōm** ‘camel’s pack-saddle’

Karakh. *qom* (MK); Turkm. *Gōm*; MTurk. *qom* (MA); Uzb. *qum*; Bashk. *qum*; Kirgh. *qom*; Kaz. *qom*; KKalp. *qom*; Oyr. *qom*; Tv. *qom*; Tof. *xom* (Starostin et al. 2003:717).

Turk. > WMo. *qom* (KW 184, Шербак 1997, 139), whence Evk. *kōm*, Man. *qomo* (see TMC 1, 408, Doerfer MT 61).

**\*Konak** ‘foxtail millet’

OUig. *qonaq* 1; Karakh. *qonaq* 1; Chag. *qonay*, *qonaq*; KKalp. *qonaq* 1; Kirgh. *qonoq* 1, 2; Uzb. *qunəq* 1, 3; Uigh. *qonaq* 3, 4, 5; Tuv. *xonaq* 2 (Tenišev et al. 2001:458–459).

‘foxtail millet 1, a k. of weed 2, broomcorn millet 3, sorgho 4, maize 5’

**\*koń** (~ \*Koyñ) ‘sheep’

\*qoni > \*qoń (Tenišev et al. 2001:431–432), \*Koyñ (Dybo 2007:43)

Tuv. *xoy*; Tofa *hoj*; Khak *xoy*; S.-Yugh. *xoy*; OTurk. *qoy*; Karakh. *qoy*; Argu (MK) *qon*; Chag. *qoy*; Uzb. *qoy*; Uigh. *qoy*; Khal. *qōon*; Tur. *koy(u)n*; Az. *Goy(u)n*; Turkm. *Goy(u)n*; Kar. *qoy*; Kum. *qoy*; KBalk. *qoy*; Tat. *quy* ‘fat-tailed sheep’; Bashk. *quy* ‘fat-tailed sheep’; Nog. *qoy*; Kaz. *qoy*; KKalp. *qoy*; Kirgh. *koy*; Oyr. *koy* (Dybo 2007:43).

> Mong. *koni-n* > Tung. *konin* ‘id.’ (Janhunen 2012).

**\*Korī ‘lamb’**

OÜig. *qozī* (*quzī*); Karakh. *qozī* (*quzī*) (MK); Tur. *kuzu*; Gag. *quzu*; Az. *Guzu*; Turkm. *Guzī*; Sal. *qōza*; Khal. *quzī*; MTurk. *qozī*, *qozu*; Uzb. *quzī*; Üig. *qoza*; Krm. *qozu*; Tat. *quzī* (dial.); Kirgh. *qozu*; Kaz. *qozī*; KBalk. *qozu*; KKalp. *qozī*; Kum. *qozu* (dial.); Nogh. *qozī*; Süig. *quzī*, *qozī*, *qoza* (Starostin et al. 2003: 809).

Cf. PMo *\*kuriġan* ‘lamb’: MMong. *quriqa(n)*, *qurixan*, *qəriyan*; WMo. *quriyan*, *quraya(n)*, *qurya(n)*; Kh. *xurgan*; Bur. *xurġa(n)*; Kalm. *xuryn*; Ord. *xurGa*; Mog. *qoryan*; Dong. *quyan*, *Guyan*; Bao. *GorGaŋ*; S.-Yugh. *χurGan*; Mongr. *xorGa*, *xuroG* (possibly < Turk.).

**\*kōlēk ‘young of camel’**

Tur. *kōšek*, *gōšek* (dial.) 1; Az. *košak* 1; Turkm. *kōšek* 1; MTurk. *kōšek* (AH) 1; Uzb. *kūšek* (dial.) 1; Bashk. *kölökey* 2; KKalp. *kōšek* (dial.) 1; Kum. *kiley* (dial.) 3 (Starostin et al. 2003: 717); Bulg. > Hung. *kölyök* ‘young of an animal, kid, puppy, lad’ (Róna-Tas & Berta 2011: 586–588).

‘young of camel 1, calf 2, cub 3’.

Cf. PMo *\*gölige* ‘pup, young dog or cat’: WMo. *gölüge*, *gölige* (L 386); Kh. *gölög*; Bur. *gülge(n)*; Kalm. *gölge*; Ord. *gölögö*; Dag. *gulug*, *gulgū* (Тод. Дар. 133); S.-Yugh. *gälæg*; Mongr. *gor-go* (SM 143), *gulgo*.

**\*Kulum ‘foal’**

OTurk. *qulun* (Yen.); Karakh. *qulun* (MK); Tur. *kulun*; Az. *Gulun*; Turkm. *Gulun*; MTurk. *qulun*, *qulum* (Pav. C.); Uzb. *qulun* (dial.); Üig. *qulun* (dial.); Tat. *qolin*; Bashk. *qolon*; Kirgh. *qulun*; Kaz. *qulin*; KKalp. *qulin*; Nogh. *qulin*; Süig. *qulun*, *qulum*, *qulim*, *qolon*; Khak. *xulun*; Oyr. *qulun*; Tv. *qulun*; Chu. *xə<sup>w</sup>m*; Yak. *kulun* (Starostin et al. 2003: 735).

May be a Proto-Altaic root, cf. PMo *\*kulan* ‘ass’: MMong. *qulan* (SH), *qulan* (MA); WMo. *qulan*, *külen* (L 984); Kh. *xulan*; Bur. *xulan*; Kalm. *xulŋ*, *xulŋ*; Ord. *xulan*.

**\*Kumür ‘alcohol milk drink’**

Karakh. *qimüz* (MK, KB); Tur. *kimüz*; Az. *Gimüz*; Turkm. *Gimüz*; MTurk. *qimüz* (Pav. C.); Uzb. *qimüz*; Üig. *qimüz*; Tat. *qimüz*; Bashk. *qomod*, *qimüd*; Kirgh. *qimüz*; Kaz. *qimüz*; KKalp. *qimüz*; Nogh. *qimüz*; Khak. *ximīs*, Sag. Koib. *xumīs*; Oyr. *qimīs*; Tv. *ximīs*; Chu. *kə<sup>w</sup>mə<sup>w</sup>s* < Kypch.; Yak. *kimīs* (Starostin et al. 2003: 641).

Cf. PMo *\*kimur* ‘fermented milk with water’: WMo. *kimur*, *kimurayan*; *kiram*, *kirma* (L 470) ‘boiled milk with water’; Kh. *šaram* ‘boiled water with milk’; Kalm. *kimr*, *kimrān*; Ord. *kirma* (possibly < Turkic).

**\*Kūrīt ‘a k. of dried quark, cheese’**

OÜig. *qurut*; Karakh. *qurut*; MKypch. *qurut*; Chag. *qurut*; Tur. *kurut*; Az. *qurut*; Turkm. *qurt*; Tat. *qort*; Bashk. *qort*, *qorot*; Nogh. *qurt*; KKalp. *qurt*; Kaz. *qurt*; Kirgh. *qurt*, *qurut*; Oyr. dial. *qurut*, *quryut*; Uzb. *qurt*, *qurut*; Üigh. *qurt*; Khak. *xurut*; Tuv. *qurut*; Chu. dial. *kə<sup>w</sup>rt* (Sevortjan et al. 1974–2003, 6: 170–171).

A derivative of *\*Kūr-* ‘to dry’.

**\*oglak** ‘kid’

\*oyılaq (Tenišev et al. 2001:429–430), \*oglag (Dybo 2010:83)

Bulg. (or Kypch.) > Hung. *olló* (ibid.); Karakh. *oylaq*; MKypch. *oylaq*, *oyalaq*, *oyulaq*, *ulax*; Tur. *odlak*; Gag. *olak*; Az. *oylay*, *oyla:q*; Turkm. *owlaq*; Sal. *oylax*, *olax*; Kar. *ulaq*; KBalk. *ulaq*; Kum. *ulaq*; Nog. *ulaq*; Bashk. *ılaq*; KKalp. *ılaq*; Kaz. *laq*; Kirg. *ulaq*; Oyr. *ulaq*, *uwlaq*; Uzb. *uloq*; Uigh. *oylaq*; Khak. *oylax* ‘young wild goat’ (Tenišev et al. 2001:429–430).

A derivative of \*ogul ‘son’ or \*ogla- ‘to shout, to make a racket’.

**\*or-** ‘to mow, reap, harvest (a crop)’

Karakh. *or-* (MK) 1; Turkm. *or-* 1, 2; Kar. *or-* 1, 2; Kum. *or-* 1; KBalk. *or-* 1, 2; Kirgh. *or-* 1, 2; Kaz. *or-* 1; Nogh. *or-* 1; KKalp. *or-* 1, 2; Uigh. *or-* 1, 2; Uzb. *or-* 1, 2; Sal. *or-* 1, 2; Tat. *ur-* 1; Bashk. *ur-* 1; S.-Yugh. *ur-* 2, 3; Tur. *ora-* 1; Chu. *vır-* 1 (Sevortjan et al. 1974–2003, 1:468).

‘to reap, harvest (a crop) 1, to mow 2, to cut grass 3’

**\*ökür** ‘bull, ox’

OTurk. *öküz* (OUygh.); Karakh. *öküz* (MK); Tur. *öküz*; Gag. *yöküz*; Az. *öküz*; Turkm. *ökiz*, *öküz*; MTurk. *öküz* (Pav. C.); Uzb. *hökiz*; Uig. *öküz*, *höküz*; Krm. *öküz*, *ögüz*; Tat. *ugiz*; Bashk. *ugid*; Kirgh. *ögüz*; Kaz. *ögiz*; KBalk. *ögüz*; KKalp. *ögiz*; Kum. *ögüz*; Nogh. *ögiz*; SUig. *kus*; Chu. *və<sup>w</sup>gə<sup>w</sup>r*; Yak. *oyus*; Dolg. *ogus* (Starostin et al. 2003:1168–1169).

Cf. PMo \**hüker* ‘ox’: MMong. *xuker* (SH), *xuger* (HY 10), *ukär* (MA); WMo. *üker* (L 1003); Kh. *üxer*; Bur. *üxer*; Kalm. *ükṙ* ‘cow’; (KPC); Ord. *üker*; Mog. *ükär* (Weiers), ZM *okär* (20–4); Dag. *xukur* (Тод. Дар. 179), *hukure* (MD 166); Dong. *fugie(r)*; Mongr. *fugor* (SM 104), *xukur* (Minghe). Cf. also Evk. *hukur*; Evn. *höken*, *hökön*; Sol. *uxur* ‘ox’ (possibly Turkic > Mongolic > Tungusic).

**\*sag-** ‘to milk’

OTurk. *say-* (OUygh.); Karakh. *say-* (MK); Tur. *sā-*, dial. *say-*; Gag. *sā-*; Az. *say-*; Turkm. *saG-*; Sal. *sax-*; Khal. *say-*; MTurk. *say-* (Pav. C.); Uzb. *say-*; Uig. *say-*; Krm. *sav-*; Tat. *saw-*; Kirgh. *sā-*; Kaz. *saw-*; KKalp. *saw-*; Kum. *sav-*; Nogh. *saw-*; SUig. *say-*; Khak. *say-*; Oyr. *sā-*; Tv. *say-*; Chu. *sə<sup>w</sup>v-*; Yak. *ia-* (Starostin et al. 2003:1198).

The root is likely to be genetically connected with PMo \**saya-* ‘to milk’: MMong. *sa’a-* (SH), *sa-* (MA 319); WMo. *saḡa-* (L 656); Kh. *sā-*; Bur. *hā-*; Kalm. *sā-*; Ord. *sā-*; Mog. *sə-* (Weiers); ZM *sā-* (23–5b); Dag. *sā-* (Тод. Дар. 161, MD 204); Dong. *sa-*; Bao. *sā-*; S.-Yugh. *sā-*; Mongr. *s(w)ā-* (SM 356), *sāli* ‘animal qu’on trait, femelle (brebis, chèvre)’ (SM 321).

**\*sariḡ** ‘sheep’

Tat. *sariḡ* 1; Bashk. *hariḡ* 1; Kaz. *sariḡ* 2; KKalp. *sariḡ* 2; Chu. *sorəx* 1 (Starostin et al. 2003:1283) ‘sheep 1, a k. of tailless sheep 2’

Cf. PMo \**serke* ‘gelded goat’: WMo. *serke*; Kh. *serx*; Bur. *herxe*; Kalm. *serkə*; Ord. *serḡe*; Dag. *selek*, *selke*; S.-Yugh. *serke* (possibly < Turkic).

**\*sa(r)pan** ‘plough’

Karakh. *saban* (MK); Tur. *saban*; Gag. *saban*; Az. *sapan*; Sal. *sovan* ‘coxa’ (CCЯ); MTurk. *saban* (IM, AH), *sapan* (Pav. C.); Uig. *sapan*; Krm. *saban*; Tat. *saban*; Bashk. *haban*; Kaz. *saban*; KBalk. *saban*; Kum. *saban*, *sarapan* ‘plough breast’; Nogh. *saban*; Chu. *sorban* ‘plough breast’ (Starostin et al. 2003:1216).

*\*sigir* ‘cattle’

Bulg. *šegor*; Karakh. *siyir* 1, 4, MKypch. *siyir*; Chag. *siyir* 3; Tur. *siyir* 1; Gag. *siyir* 1, 2; Az. *siyir* 1; Khal. *siyir* 6; Turkm. *siyir* 4, 6; Kar. *siyir* 1, *siyir* 4; KBalk. *siyir* 1, 4; Kum. *siyir* 4; Tat. *siyir* 4; Nogh. *siyir* 4; KKalp. *siyir* 6; Bashk. *hiyir* 4; Kirgh. *siyir* 4; Oyr. *siyir* 4; Uzb. *sigir* 6; Uigh. *siyir* (Tenišev et al. 2001: 435–436).

‘cattle 1, herd 2, bull 3, cow 4, the year of cow 5’

Probably a Proto-Altaic root, cf. pTg *\*sig-* / *seg-* ‘wild deer’: Evk. *segžen*, dial. *sekserge* ‘wild deer’; Nan. *segži* ‘herd of wild swine’; Ud. *sigisa* ‘one year old maral’. Cf. also PJap. *\*sika* ‘deer’ and probably pMo *\*seyenek* (~ -i-) ‘he-goat (2 years old)’: WMo. *segenek* (L 684: *sejinug*); Kh. *sijneg*; Bur. *hīneg* ‘castrated he-goat; ox’; Kalm. *sinək* (Starostin et al. 2003: 1243–1244).

*\*sogan* ‘onion’

OTurk. *soyun* (OUygh.); Karakh. *soyun* (MK); Tur. *soyan*; Gag. *suvan*, *suan*; Az. *soyan*; Turkm. *soyan*; Sal. *soyan*, *soyān*; Khal. *soyan*; MTurk. *soyan* (AH, IM, Pav. C.); Uig. *soyan*; Tat. *suyan*; Bashk. *huyan*; Kirgh. *soyan*, *soyon*; KBalk. *soxan*; Kum. *soyan*; Nogh. *soyan*; SUig. *soxan*; Chu. *soyan* (Starostin et al. 2003: 1303).

Cf. PMo *\*songina* ‘onion’: MMong. *soṅgina* (HY 8), *sunqinā* (MA); WMo. *songina* (L 727); Kh. *songin*; Bur. *hongino*; Kalm. *songinə*; Ord. *songinoG*; Dong. *sunguna*; Mongr. *suṅGunoG* (possibly < Turkic).

*\*Tari-* ‘to cultivate (ground)’

OTurk. *tari-* (OUygh.); Karakh. *tari-* (MK, KB); MTurk. *tari-* (Abush., Sangl.); Uig. *teri-* (dial.); SUig. *tari-*; Khak. *tari-*; Oyr. *tari-*; Tv. *tari-*; Tof. *tari-* (Starostin et al. 2003: 1438).

See also *\*darig* ‘corn’. Cf. WMo. *tari-* ‘to sow, plant, plough’, pTg *\*tari-* ‘to cultivate, farm, plow’: Evk. *tari-* ~ *tare-*, Solon *tari-*, Manchu *tari-*, Nanai/Ulcha *tari-*.

*\*teke* ‘he-goat’

OUig. *teke*; Karakh. *teke* (MK, IM); Tur. *teke*; Gag. *teke*; Az. *tākä*; Turkm. *teke*; Khal. *tākä*; MTurk. *teke* (Sangl.); Uzb. *taka*; Uig. *tekä*; Krm. *teke*, *tege*; Tat. *tākä* ‘козел, баран’; Bashk. *tākä* ‘he-goat, ram’; Kirgh. *teke*; Kaz. *tekä*; KBalk. *teke*; KKalp. *teke*; Kum. *teke*; Nogh. *teke*; SUig. *teke*; Oyr. *teke*; Tv. *de* ‘ge, te ([dhe]); Tof. *te’he*; Chu. *taga* ‘he-goat, ram’ (Starostin et al. 2003: 1430–1431)

> Mong. *teke* ‘he-goat’.

*\*tirma-k* ‘harrow’

Tur. *tirmik*, Gag. *tirmik*; Tat. *tirma*; Kum. *taraq*; Yak. *taraax*; Uigh. *tarmaq*; Khak. *tarbas-ta-* ‘to harrow’ (Tenišev et al. 2001: 467–468)

A common derivative of *\*tirma-* ‘to scratch’.

*\*tör-um* ‘camel colt’

Karakh. *torum* 1, *torpi* 2 (MK); Tur. *deve torun* 1, *torum* (dial.) 1; *torbuč* (dial.) 3, (?) *toru* (dial.) 4; Gag. (?) *tor* ‘unbroken (of a horse), untrodden (of a path)’; Turkm. *törum* 1; Sal. *tori* ‘foal’ (CCЯ); MTurk. *torum* 1 (Sangl., Pav. C.), *torbaq* 2 (MA 126); Uig. *topaq* 2, *topaq-torum* ‘young calves’; Tat. *törbaq* (KCTT) 2; Bashk. *tana-turpaq* 2; Kirgh. *torpoq* 2; Kaz. *torpaq* 2; Khak. *torbax* 2; Oyr. *torboq* 2, *torboč* (dial. Kumd.) 5; Tv. *dorum* 1; Yak. *torbos*, *torbužax* 2 (Starostin et al. 2003: 1464).

‘young camel 1, a young calf 2, a goat that has yeaned early 3, young 4, a cow that has not calved yet 5’

Probably a Proto-Altaic root, cf. PMo *\*toruy* ‘young pig’: WMo. *torui* (L 827); Kh. *toroy*; Bur. *toroy*; Kalm. *torä*; Ord. *torō* ‘young donkey’; pTg *\*tora-kī* (~-ü) ‘boar’: Evk. *torokī*; Neg. *torokī*.

*\*tögi* ‘millet groats’

OÜig. *tögö* 1; MKypch. *tüwi*, *tü* 1; Tur. *dügü* 1, 2; Az. *düyü* 2; Turkm. *tüvi* 2; KBalk. *tüy* 1; Tat. *döge* 2; Nogh. *tüy* 1.

‘husked millet, millet groats 1, husked rice 2’.

A common derivative of *\*tög-* ‘to crush, to husk (e.g. grain)’.

*\*ud* (~ *\*od*) ‘cattle’

OTurk. *ud* (OUygh.); Karakh. *uδ* (MK); MTurk. *uy* (Бор. Бад., Abush., Pav. C.); Uig. *uy*; Kirgh. *uy*; SUig. *ut*; Oyr. *uy* (Starostin et al. 2003: 1484); ? Chu. *vilʹəχ* < *vəʷyləχ* (< *\*od*) (Mudrak 1993).

Cf. PMo *\*odus* ‘wild yak, buffalo’: MMong. *odos* (HY 11); WMo. *udus* (L 862); Kh. *odos* (BAMPC) (possibly < Turkic).

*\*ulala* ‘(small) horse’

Chu. *laža* 1, 3; Turkm. *alaša* 1; Tur. dial. *alaša* 2; Az. *alaša* 2; KTat. *alaša* 1; Kar. (K) *alaša* 3; Kum. *alaša* 1, 3, 4; KBalk. *alaša* 1, 3, 4; Tat. *alaša* 1, 3, 4, 5; Bashk. *alaša* 1; Kirgh. *alasa*; Kaz. *alasa*; Nogh. *alasa*; KKalp. *alasa*; Uz. dial. *lača* 2 (Sevortjan et al. 1974–2003, 1: 135–136).

‘gelding 1, bad/small horse 2, horse 3, small 4, bad, ugly 5’

Possibly a derivative of *\*al-* ‘to be(come) weak’. On reconstruction of the initial vowel see Tenišev et al. (2006: 181).

*\*ügür* ‘broomcorn millet’

OÜig. *üyür* 1, 2; Karakh. *ügür* (*yügür*; *yü:r*) 1; Chu. *vir* 1; Yak. *üöre* 1; ? Tv. *ü:rgene* 3 (Starostin et al. 2003: 1548; Tenišev et al. 2001: 458).

‘proso (broomcorn) millet 1, seeds, grains (e.g., of seasonings) 2, a k. of buckwheat 3’.

*\*yasmik* ‘lentils’

Chag. *yasmuq*; Tur. *yasmuq*; Turkm. *yasmîq*; Tat. *yasmîq*; Bashk. *yaθmiq*; Uzb *yasmiq* (Tenišev et al. 2001: 464–465).

A common derivative of *\*yas-* ‘to be(come) flat’.

*\*yAsna-k* ~ *\*yAsna-g* ‘pig’

Bulg. > Hung. *disznó*, Mari *sösna*, *sasna*; Chu. *sisna* (contamination with *sis-* ‘to defecate’) (Starostin et al. 2003: 1237; Fedotov II: 77)

The root is preserved only in the Bulgar branch but is likely to be archaic.

*\*yilki* ‘herd of horses’

OTurk. *yilqî*; Karakh. *yilqî* 1; MKypch. *yilqî* 2; Chag. *ilqî*; Tur. *yilqî* 3; Turkm. *yilqî* 3, 4; Kar. (K) *yilqî* 3, 4; Kum. *yilqî* 3; Bashk. *yilqî* 2; Nogh. *yilqî* 2, 3, 4; Az. *ilxî* 3; KBalk. *jilqî* 3; Kirgh. *jilqî* 2, 4; KKalp. *žilqî* 2, 4; Kaz. *žilqî* 2; Oyr. *yilqî*, *yilyî* 3; Uzb. *yilki*; Uigh. *žilqî*; Khak. *čilyî* 3, 4; Chul. *čilyî*; Tuv. *čilyî*; Yak. *silyî* 2 (Tenišev et al. 2001: 444–445).

‘cattle 1, horse 2, herd of horses 3, year of the horse 4’.



*\*yogurt* ‘curdled milk’

OTurk. *yoyrot*, *yuryut*, *yuyrut* (OUygh.); Karakh. *yuyrut*, *yoyurt* (MK); Tur. *yoyurt*, *yourt*; Gag. *yürt*; Az. *yoyurt*; Turkm. *yoyurt*; MTurk. *yayurt* (Houts., AH); Uzb. *žuryət* (dial.); Kirgh. *žūrat*; KBalk. *žuwurt*, *žuwurt*, *zuwurt*; Kum. *yuwurt*; Nogh. *yuwürt*; SUig. *yoyurt*, *yuyurt*; Yak. *suorat*.

Possibly a derivative of *yogur-* ‘to knead’ or a homonymous verb meaning ‘to thicken, condense’ (Sevortjan et al. 1974–2003, 4: 207–208).

*\*yunt* ‘horse’

OTurk. *yunt* (Orkh., OUygh.); Karakh. *yunt* (MK); Tur. *yont*; MTurk. *yunt* (Ettuhf.), *yunad* (AH); SUig. *yut*, *yot*; ? Yak. *sono-yos* ‘young horse’ (Starostin et al. 2003: 1523).

Cf. PSam. *\*yuntz* ‘horse’, which may be a borrowing from pTk (Dybo 2007: 143; vice versa in Sinor 1965: 312).

*\*yügen* ~ *\*üygen* ‘bridle’

Karakh. *yügön* (MK, IM); Tur. *oyan*; Az. *yüyän*; Turkm. *üyen*, *uyan*; MTurk. *uyan* (Pav. C.); Uzb. *yugan*; Uig. *yügän*; Krm. *iygen*, *yügen*; Tat. *yögän*; Bashk. *yügän*; Kirgh. *žügön*; Kaz. *žügen*; KBalk. *žügen*; KKalp. *žüwen*; Kum. *yügen*; Nogh. *yüwen*; SUig. *yuyin* (ЯЖУ); Khak. *čügen*; Shr. *čügen*; Oyr. *üygen*; Tv. *čüyen*; Chu. *yə<sup>w</sup>ven*; Yak. *ün* (Starostin et al. 2003: 878).